

Name: Answer Key

Period: \_\_\_\_\_

### Chapter 7 Exam Study Guide

1. An adult female panda weighs 200 lb. Its newborn baby weighs only  $\frac{1}{4}$  lb. What is the ratio of the weight of the adult to the weight of the baby panda?

$$200 : 0.25 \rightarrow 800 : 1$$

2. An animal shelter has 208 cats and dogs. The ratio of cats to dogs is 5 : 3. How many cats are at the shelter?

$$\text{Parts} \rightarrow \text{whole} \quad 3x + 5x = 208 \quad x = 130$$

3. The sides of a triangle are in the extended ratio of 3 : 2 : 4. If the length of the shortest side is 12 cm, what is the length of the longest side?

$$2x = 12 \quad 4x = 4(6) = 24$$

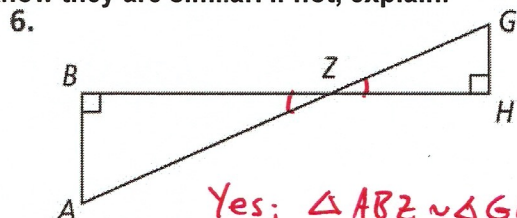
$$x = 6$$

Solve each proportion.

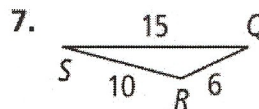
4.  $\frac{x}{10} = \frac{7}{20} \quad x = 3.5$

5.  $\frac{x}{x+5} = \frac{5}{7} \quad x = 12.5$

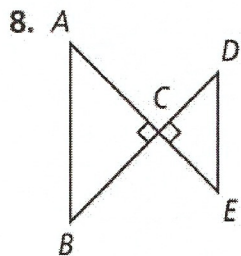
In Exercises 6–9, are the triangles similar? If yes, write a similarity statement and explain how you know they are similar. If not, explain.



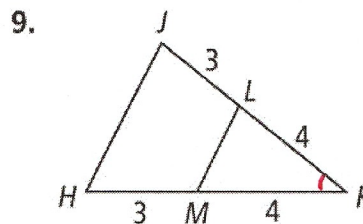
Yes;  $\triangle ABZ \sim \triangle GHZ$   
AA postulate



Yes;  $\triangle QRS \sim \triangle VTU$ ; SSS Theorem



No. Not enough information to say.



$\angle K \cong \angle K$  (reflexive) ✓

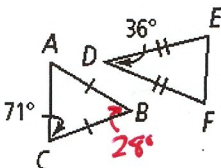
$$\frac{HJ}{HK} = \frac{ML}{LK} \quad \frac{3}{4} = \frac{3}{4} \quad \frac{JK}{JK} = \frac{JK}{JK} \quad \checkmark$$

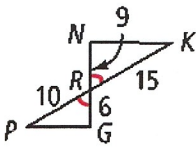
Yes;  $\triangle HJK \sim \triangle MLK$ ; SAS Theorem

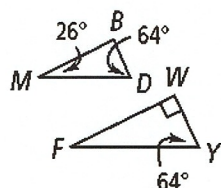
9. The scale of a map is 1 in. = 50 mi. On the map, the distance between two cities is 5.25 in. What is the actual distance?

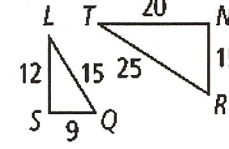
$$\frac{1}{50} = \frac{5.25}{x} \Rightarrow x = 262.5 \text{ miles}$$

Determine whether the triangles are similar. If so, write the similarity statement and name the postulate or theorem you used. If not, explain.

10.  No, angles are not congruent

11.   $\triangle PRG \sim \triangle KRN$   
SAS theorem  
 $\frac{6}{9} = \frac{10}{15}$  ✓  
 $\angle NRK \cong \angle PRG$  ✓

12.   $\triangle MBD \sim \triangle FWY$   
AA postulate

13.   $\triangle TNR \sim \triangle LSQ$   
SSS theorem  
 $\frac{9}{15} = \frac{12}{20} = \frac{15}{25}$  ✓

13. A person 2 m tall casts a shadow 10 m long. At the same time, a building casts a shadow 36 m long. How tall is the building?

$$\frac{2}{10} = \frac{x}{36} \quad \frac{72}{10} = x \quad 7.2 = x$$

14. Are regular polygons always similar? **EXPLAIN** your answer.

Yes! Regular polygons have all sides the same length. Therefore their side ratios will always be equal.

15. A student has pages of notes for English, Science and Math in the ratio 3 : 5 : 9. If the student has a total of 340 pages of notes, how many are for each subject? **Check your answer!**

$$\begin{aligned} 3x + 5x + 9x &= 340 \\ 17x &= 340 \\ x &= 20 \end{aligned} \quad \begin{aligned} \text{English} &= 3x = 60 \\ \text{Science} &= 5x = 100 \\ \text{Math} &= 9x = 180 \end{aligned} \quad \begin{array}{r} 60 \\ 100 \\ + 180 \\ \hline 340 \end{array} \checkmark$$

16. Explain how similar triangles can be used to measure an object indirectly. Give a specific example.

Height and shadow, as with question #13:

$$\frac{\text{Height}}{\text{shadow}} \Rightarrow \text{person} = \text{building} \Rightarrow \frac{2}{10} = \frac{x}{36} \quad x = 7.2$$

17. What is the difference between proving that a set of quadrilaterals are similar and proving that a set of triangles are similar?

To be similar, all angles must be congruent and all side ratios must be equal. So for quadrilateral, 4 angles & 4 sides. Triangles are only 3 angles & 3 sides plus you can use AA, SSS & SAS for triangles.